

CURRENT LITERATURE.

Orchids of New England: a popular Monograph. By Henry Baldwin. 8 vo. pp. 159, figs. 40. New York. John Wiley & Sons, 1884.

Mr. Baldwin tells us in his preface that he had for some years "a bowing acquaintance" with the Orchidaceæ of his neighborhood, but was brought to closer observation of them by making sketches of the various species. His acquaintance now has certainly become more than a bowing one, and he details in this book many choice bits of information which only a close observer would have gathered. The various species are figured and discussed in the order in which they come into flower. In a pleasant way he chats about the habits and habitats of one and another, quoting freely from several previous writers on Orchids both popular and scientific, as to the structure, homology and physiology of the floral and other organs. It would have been better had Mr. Baldwin given more of his own observations and experiments as to these points. It would not have made the book less popular, and would have rendered it still more interesting to the botanists who are above (?) reading a popular book. New England certainly contains more species of Orchidaceæ than any equal area in the United States, forty seven being enumerated in the table of geographical distribution at the close of the book. In addition to this table a full though not complete bibliography and good indexes make the book very useful to botanists—more especially New England botanists. The figures, photo-engravings of the author's drawings, are all good, and many of them excellent.

Descriptive Catalog of the North American Hepaticæ North of Mexico. By Lucien M. Underwood, Ph. D. pp. 133. Bulletin of the Illinois State Laboratory of Natural History.

To those who are acquainted with Dr. Underwood's previous volume, "Our Native Ferns and their Allies," which has brought the author much deserved credit for its careful and able preparation, it will be no surprise to find the present work equally well done. Dr. Underwood has, in this pamphlet, made a very praiseworthy and successful effort to set in order the species of Hepaticæ heretofore published from the region named. He has made no attempt to describe new species, "believing that too many have already been described from insufficient data." How many difficulties he met in getting out descriptions of the already published species, no one knows so fully as Dr. Underwood, because no one else has undertaken the task. We get a mere hint of them in the prefatory note. Neglect by collectors, rarity and inaccessibility of the literature, absence of American species from American collections, and inherent complexity, are enough to have deterred a less energetic worker than Dr. Underwood. Let botanists show their appreciation of his labor by communicating to him specimens of all forms found in their localities. In addition to the descriptions of species and genera, there is a brief account of structure, habits, geographical distribution, remarks on collecting and a complete bibliography of systematic works. Finally, let botanists rejoice that there is *one* State, at least, enlightened enough to support a State Laboratory of Natural History.

Vergleichende Morphologie und Biologie der Pilze, Mycetozen und Bacterien. Von A. de Bary. Wilhelm Engelmann. Leipzig, 1884. 8vo. 558 pp. 196 Illust.

The original work, written in 1865, was entitled "Morphologie und physiologie der pilze, flechten und myxomyceten," and contained but 316 pages. The remarkable progress since made in the study of these plants is indicated in the change of title, in which the lichens are absorbed in the fungi, and the new class of bacteria added, but yet more by the table of contents, showing a won-

derful revolution and expansion in all that pertains to sexuality and classification.

The comprehensive statement of a subject by a master is invaluable to those who have passed the threshold of the study; and such we have in the work before us. It is a concise presentation of the principal facts, and a clear and critical discussion of their bearing. Such topics as the first recognition of form-species and genera in 1851, the homology and relationship of the fungi with algæ, mosses, ferns and flowering plants, interrupted homologies, the doctrine of apogamy, the meaning of pleomorphism, the discussion of proper terminology, copulation in the *Ustilagineæ*, the relation of the parasite to the host, form-genera in bacteria, and pathological bacteria, are replete with interest and instruction; limited space does not permit the mention of a longer list.

The author has placed all the best known groups in an ascending Ascomycetous series, beginning with *Peronosporæ* and passing through the *Saprolegniaceæ*, *Mucorini*, *Entomophthoræ* and *Ascomycetes* to the *Uredineæ*. The imperfectly known *Chytridineæ*, *Ustilagineæ*, *Saccharomycetes* and *Basidiomycetes* are treated as out-lying groups related to the higher forms.

The work is so fundamental and authoritative that no investigator can afford to remain ignorant of its contents.

Das Botanische Practicum. Von Dr. Edward Strasburger. Gustav Fisher. Jena, 1884. 8vo. 664 pp. 182 Illust.

Some idea of the importance of this work has already been presented in the August number of the GAZETTE. It aims to give a very full course in the essential features of the minute and gross anatomy of plants, adapted to both the beginner and the advanced student. The work is divided into thirty-four tasks, most of them too long for a single sitting, as laboratory work is conducted in this country. The first chapter treats of the parts of the microscope, the preparation of an object, and the study of various kinds of starch grains, introducing such simple reagents as iodine, potash and sulphuric acid, and the use of the polarizer. The second chapter takes up the study of the grains of peas and corn, illustrating the methods of making and mounting temporary and permanent sections, both free hand and with apparatus. The seeds of several other plants are then studied. The third chapter deals with protoplasm and its movements as seen in *Vaucheria*, the hairs of *Tradescantia*, *Cucurbita*, *Lamium*, etc., and in the cells of *Vallisneria* and *Nitella*, with the action of reagents, and method of using the camera lucida. The fourth chapter treats of chlorophyll grains, color bodies and leucoplasts in a variety of plants, and so on. It is impossible to more than barely indicate the completeness and suggestiveness of the work, the table of contents alone covering twenty-three pages. The student is led by easy stages to an understanding of the methods of investigation, and a knowledge of the mysteries of structure that have justly placed German botany so far in advance of the rest of the world. No topic of importance is left untouched, and abundant references indicate the source of additional information. Until translated it can not be used very much, of course, as a handbook, but is admirably adapted to individual study wherever the language is not too great an impediment, for which the remarkably copious index, such a rarity in German works, is of much assistance.

Diseases of Field and Garden Crops, chiefly such as are caused by fungi. By Worthington G. Smith, F. L. S. Macmillan & Co. London, 1884. 12mo. 353 pp. 143 Illust.

This work is timely, and deserving of attention. We have had numerous works of all grades on the cultivator's insect foes, but this is the first book in our language on fungous foes. The damage which fungi do annually to cultivated crops is something enormous, and far beyond the popular apprehension. This comes from the fact that the true nature of the diseases which owe their

origin to this cause is not usually well understood, or it may be not suspected; and the fungi themselves are minute and obscure, are insidious in their attacks, and difficult of control. Although the annual loss to the country from the depredations of fungi is undoubtedly as great as that from insects, we yet have no government or state reports on the subject, and but limited investigations. It is therefore very apparent that if Mr. Smith's work is accurate and readable, it meets a genuine need; and such, we hasten to assure the reader, is in the main the case.

The topics treated are the diseases of potatoes and onions, rust and smut of grain, mildew and other diseases of grass, ergot, club-root in turnips and cabbage, mildew of peas, lettuce and turnips, and various less known diseases. A few, like the clover sickness, clover dodder and ear-cockle (the last two, by the way, not of fungous nature), and some others, are unknown or not troublesome in America, but for the most part the book is as applicable here as in England. The few remedies only which are suggested show how little has yet been done in this line.

The illustrations are clear and suggestive, although we must demur to giving the impression that such highly diagrammatic drawings are produced by the camera lucida.

The author has a good deal of that quality known in America as Johnny Bull, and it has led him into giving undue prominence to a topic on which he holds antiquated notions, and which he tries to pass current by propping up with bad philosophy. We refer to the forty pages on the connection of corn mildew and barberry blight, which had better been left unsaid. We speak of the subject elsewhere in this journal. The chapter on the passive state of the potato disease also needs critical sifting.

The Agricultural Grasses of the United States. By Dr. George Vasey. Also, *The Chemical Composition of American Grasses.* By Clifford Richardson. Department of Agriculture, 1884.

Dr. Vasey has done a good thing for agriculturists in publishing this bulky pamphlet. There are nearly 150 pages of text, and 120 plates intended to represent all of our agricultural grasses. It does seem as though even the most obtuse observer could get from this pamphlet at least a general notion of the ordinary grasses about him. The plates will help him more than the text, for that, simplified as it has been, is unavoidably technical, although a good glossary may enable some to spell their way through. Some special reports from Montana, and the Rocky Mountain region; also in a more condensed way from other sections of our country, give additional interest. Mr. Richardson's work is given in a tabulated form, and has a very direct bearing upon the successful cultivation of grasses. There can be no doubt that by such means our farmers will be led into some scientific knowledge of the plants they chiefly cultivate, a knowledge which must have its influence in improved methods, and may act somewhat as a safeguard against much of the unutterable "scientific" bosh published by certain agricultural papers.

American Medicinal Plants: An illustrated and descriptive guide, etc. By Charles F. Millspaugh, M. D. Bœricke & Tafel, New York; Philadelphia. Nos. 1 to 5.

This is a very elaborate work, being issued in loose sheets with colored plates, and is meant to represent the American plants used as homœopathic remedies. The plants are all drawn by the author *in situ*, and are mostly very well done. Each number contains six species and plates, and one hundred and eighty are promised. The principal object seems to be to enable practitioners not only to collect fresh material within their reach, but also to understand its

preparation and application, a desire which is very well met in these handsomely printed sheets.

Characteristics of the N. Am. Flora: An address to the Botanists of the B. A. A. S., at Montreal; read August 29. From the *Am. Jour. of Sci.* 38. 323-340.

Dr. Gray's masterly address at Montreal has probably been read by all botanists, at least it ought to be, and no notice here can make good any such failure. A subject of greatest interest to us all, treated by one of all the most competent, is a combination that no American botanist can afford to neglect. Bristling as it does with interesting facts, nothing but a reprint could do it justice.

The N. Am. Geasters: By A. P. Morgan. From the *Am. Nat.* 18. 963-970.

This paper is illustrated and well describes the beautiful "Earth-Star Puff Balls." Sixteen species are described, twelve of them being figured.

Catalogue of the Flora of Minnesota, by Warren Upham, and *Preliminary List of the Parasitic Fungi of Wisconsin*, by William Trelease, come too late for review in this number, but will be more worthily noticed in the next.